Second Annual Report of the Biological and Chemical Defence Review Committee

October 1991

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INTRODUCTION

This is the second annual report of the Biological and Chemical Defence Review Committee (BCDRC). The first such report was submitted to the Deputy Minister of National Defence (DM) and to the Chief of the Defence Staff (CDS) in December 1990, and made available to the public in August 1991.

The BCDRC was established in May 1990 in response to a recommendation by William H. Barton who had undertaken a comprehensive study of the Department of National Defence's (DND's) research, development and training activities in chemical and biological defence. The Barton Report, submitted in 1988, advocated the establishment of an advisory committee of senior scientists to visit facilities and to review annually all aspects of DND's biological and chemical programs. It was further recommended that this committee report to the DM and CDS through the Chairman, Defence Science Advisory Board (DSAB).

The DSAB was requested to address this issue and its proposal to create a review committee was approved and action initiated in the autumn of 1989. To ensure credibility and independence of advice, the question of committee membership was discussed first with the President of the Royal Society of Canada. Based on these discussions and on nominations by the Chemical Institute of Canada, the Canadian Federation of Biological Societies and the Society of Toxicology of Canada, three members of the Canadian scientific community were approached concerning membership on this select committee.

In May 1990, the Minister of National Defence established the BCDRC to review annually all aspects of the research, development and training programs in biological and chemical defence undertaken by DND and to submit an annual report on its findings (BCDRC Terms of Reference are at Annex A). We, the following, accepted the Minister's request to serve for an initial three year period:

Chairman	E.R.W. Neale	Calgary, Alberta; retired from Memorial University
Member	C.E. Holloway	York University
Member	G.L. Plaa	University of Montreal.

The Chairman DSAB appointed J.A. Cotter of Sidney, B.C. as Executive Officer of the Committee.

The first challenge that confronted us was that of designing a program of work that would satisfy our need to become reasonably informed as to DND's roles, responsibilities and functioning and yet allow us to review concurrently the ongoing biological and chemical defence program in its entirety. To achieve this degree of understanding of a complex field of endeavour it was decided that a three year evolving plan be implemented. We acquired an informed overview of DND's biological and chemical program in year one and used this second year to develop our competence and to select areas deserving of concentration. This approach should permit us to complete the required in-depth analysis of DND's biological and chemical activities by the end of the third year.

COMMITTEE ACTIVITIES

To effect our mandate we visited, between 30 April and 17 May 1991, the following DND Establishments, including the associated laboratories, ranges and training facilities, and received the briefings enumerated below:

- National Defence Headquarters with staff briefings from:
  Chief Research and Development (CRAD);
  Surgeon General;
  Directorate of Scientific and Technical Intelligence; and
  Director Nuclear Biological and Chemical Coordination.
- The Canadian Forces Nuclear, Biological and Chemical (CFNBC) School with briefings on its responsibilities, resources and training.
- 1 Canadian Brigade Group and 408 Tactical Helicopter Squadron, with briefings from each on the biological and chemical training being conducted and facilities available. We also observed training exercises involving identification of biological and chemical hazards and decontamination procedures for personnel and vehicles.
- Defence and Civil Institute of Environmental Medicine (DCIEM), Toronto, with briefings on the resources, programs and responsibilities of DCIEM, the Biosciences Division and the Medical Life Support Division.
- Defence Research Establishment Ottawa (DREO) with briefings on the Protective Sciences Division and the Chemical Protection Section including current and future programs. We also visited laboratories of our choice, received briefings on classified projects and met with the scientists and consultant engineer responsible for the independent environmental audit.
- Defence Research Establishment Suffield (DRES) with briefings on the responsibilities and resources of DRES and its current and future programs. Research Directors explained the work of the Defence Technologies Division, Defence Sciences Division, the Chemical/Biological Defence Section, the Biomedical Defence Section and Project SWIFTSURE (the destruction of the old stocks of chemical agents and hazardous materials stored at DRES). The visit to DRES included tours of laboratories of our choice and an opportunity to scrutinize the descriptions of all current projects, classified and unclassified.

In addition, while at DRES, the BCDRC held privileged discussions separately with the Joint Occupational Safety and Health Committees and representatives of the three involved Unions. Further, time was made available at DRES to allow any member or groups of members to approach us to discuss matters of concern. These three activities provided helpful insights into the program and morale at Suffield.

To enhance our perspective of fellow citizens' concerns about Canada's biological and chemical activities, an evening was spent at the University of Toronto with representatives of

the Science for Peace Group and a morning session in Calgary with a member of The Canadian Physicians for Prevention of Nuclear War.

As mandated, the BCDRC reviewed DND's 1991 Biological and Chemical Defence Research and Development Program and determined that it was indeed in accordance with current Canadian Government Policy. In addition, the DCIEM, DREO and DRES Annual Reports were reviewed and the current research and development contracts and publications lists examined.

IMPLEMENTATION OF BARTON REPORT RECOMMENDATIONS

The current status of the implementation of the Barton Report recommendations was ascertained to be:

GENERAL

1. **In the course of the annual program and budgetary process, the authorizing officer at each level be required to sign a certificate of compliance with Departmental policies.**

   Certificates of Compliance for 1991/1992 were reviewed and found to be in order.

2. **A senior Review Committee be established in association with DSAB.**

   We constitute such a Committee.

3. **"Second opinions" should be obtained from outside sources on some of the potentially controversial test programs.**

   The Committee, having been tasked to examine in detail all aspects of this sensitive issue, has concluded that the most effective way to obtain credible second opinions in these exceptional circumstances would be to adopt the procedures developed for Project SWIFTSURE; particularly, the holding of public information exchanges and the formation of citizens' committees.

   To augment these initiatives, current DND policy, based on guidelines published by the Medical Research Council and the Canadian Council on Animal Care, stipulates that non-governmental specialists and lay persons be included on the Animal Care and Human Ethics Committees. In addition, the emphasis of the internal assessment of each program under review is to be placed upon the scientific usefulness of the proposed test, trial or research.

4. **A document be prepared annually which would set out the nature of the research and development work under way, the number of people involved, and the allocation of funds.**

   The seemingly satisfactory "1990 Review" was published in August 1990. The "1991 Review" is now in production with a forecasted publication date of December 1991.

5. **A layman's pamphlet be published which would help improve public understanding about Biological and Chemical Defence.**

   An adequate pamphlet was published in August 1990.

6. **A DND directive on policies and procedures regarding the use of volunteers and animals be published.**

   "DND Policy – Animal Use in Research and Development" was issued on 5 June 1989.

   A Canadian Forces Administrative Order covering the Use of Volunteers as Subjects of Research is being prepared by the Surgeon-General. Interim guidelines were issued 11 June 1990.

DRES

1. **A procedure be established to ensure that the DRES Safety Manual is reviewed at prescribed regular intervals of not more than three years. Safety drills should also be conducted at prescribed regular intervals.**

   The procedure has been established and implemented. Safety drills are being conducted as recommended.

2. **An automatic annual review and certification procedure be instituted to confirm that stocks of toxic agents are being kept to the minimum level necessary for the conduct of an efficient research and development program.**

   The annual inventory audits were completed in January 1991 and reviewed by the BCDRC in May 1991. We agreed that stocks were being maintained at a minimum level. However, there were minor inconsistencies noted in the accountability and housekeeping aspects of the control of agents held. Suggested improvements were discussed with the officials concerned and subsequently effected.

3. **The arrangements being implemented to improve security and access controls be expedited.**

   Completed.

4. **Pending the destruction of the excess agent stocks now stored in the Experimental Proving Ground (EPG), the adequacy of existing physical security arrangements be reviewed with a view to strengthening them.**

   Completed.

5. **The incinerator which is to be acquired for the program be considered for use in the destruction of other dangerous industrial chemicals, including PCBs.**

   The Alberta Government has essentially rendered this recommendation unimplementable as they have:

   a. restricted the future destruction of hazardous materials within Alberta to the Swan Hills Special Waste Treatment Facility; and

   b. imposed stringent restrictions on the moving of hazardous materials on provincial highways.

6. **The EPG operation and maintenance be given "project" status within the CRAD program.**

   Implemented. This gives positive visibility within the CRAD Program to all activities, funding and personnel involved in the EPG and ensures an annual review as a separate component of the overall program.

7. **The scope of the safety and environmental requirements governing outdoor testing at DRES be determined by the provisions of the Canadian Environmental Protection Act.**

   The Federal Minister of Environment has offered the assistance of his department in establishing guidelines for any future outdoor chemical defence testing.

8. **A full environmental audit of DRES be commissioned as soon as possible and that it be repeated at regular intervals of, say, five years.**

   The first audit was completed under a Supply and Services Canada contract by Acres Consultants Ltd and the report was received in September 1991. The extent of compliance with the recommendations of this report will be examined by the BCDRC in conjunction with its 1992 Review.

DREO

1. **A regular annual review procedure be instituted at DREO to confirm for the record that stocks of chemical agents are kept to the minimum necessary for the research and development program.**

   The annual inventory audit was completed in January 1991 and reviewed by the BCDRC in May 1991. We agreed that stocks were being maintained at a minimum level.

2. **As part of the implementation of the Canadian Environmental Protection Act, an environmental audit of DREO be carried out at the first convenient opportunity, and at regular intervals thereafter.**

   The first audit was completed under a Supply and Services Canada contract by Acres Consultants Ltd and the report was received in July 1991. The extent of compliance with the recommendations of this report will be examined by the BCDRC in conjunction with its 1992 Review.

OBSERVATIONS ON IMPORTANT ISSUES

Gulf War. Canada appears to have responded well to the needs for biological and chemical defence equipment and consultation abruptly thrust upon it by the Middle East crisis. The Canadian Forces personnel with whom we talked expressed confidence and pride in the equipment, training and advice made available to them, sometimes on rather short notice. The scientific personnel were justifiably proud of the manner in which they had been able to respond and adapt to the special needs of biological and chemical warfare threats in an unfamiliar terrain. All agreed that Canadian protective equipment, monitoring and detection devices were as good or, in most cases, better than those of our Allies. In addition, the importance of national self-sufficiency in basic materiel in an emergency was again emphasized. We concluded that Canada has been well served by its biological and chemical defence research, development and training programs of recent years.

Concerned Citizens Groups. The BCDRC met with representatives of two such organizations at their request. These were the Toronto Chapter of Science for Peace (an active national and international group with United Nations registration), and the Calgary Branch of Canadian Physicians for Prevention of Nuclear War (who have expanded their mandate to encompass a wider range of health concerns). Both written and oral submissions were received. The main concerns of these citizen groups warrant comment. Based on our research and ensuing discussions with the appropriate DND personnel, we offer the following comments.

a. **Concern:** There is a present lack of legislation in Canada pertaining to offensive biological and chemical weapons development.

   Comment: We agree that if Canada is to comply fully with the Biological and Toxin Weapons Convention and the anticipated Chemical Weapons Convention, then some legally constraining regulations will be essential.

b. **Concern:** Canada's biological and chemical research and development program should be totally transparent.

   Comment: Significant steps have been taken in this regard by the Department over the past several months. There has been an evident increase in media initiatives, in the publication of technical/scientific articles and in open communication. The continuation and expansion of these measures would further enhance public awareness and confidence. In addition, trial inspections involving other nationals and representatives of Canadian industry have been conducted both at home and abroad.

c. **Concern:** Allegations of possible commitment to other Nations' biological and chemical research programs were made on the basis of Canada being a signatory to certain treaties and memoranda of understanding (MOU) which were classified and hence not readily available for perusal.

   Comment: The applicable treaties and MOUs were examined and no evidence of such a commitment was found.

d. **Concern:** The need for a "Level 4" containment facility which, allegedly, is to be built soon at DRES has caused widespread questioning of Canada's motives.

   Comment: Although a Level 3 facility for biological research is required by DRES to meet Health and Welfare Canada standards, funding has yet to be approved. Further, it is probable that construction of such a facility would be implemented with complete community awareness in a manner similar to that of Project SWIFTSURE.

   It should be noted, however, that the major differences in containment facilities occur between levels 2 and 3

Virtually all essential biological defence research may be carried out at level 3. Similarities between levels 3 and 4 are such that level 4 extras should probably be roughed in when building a level 3 facility for economic reasons, if only in anticipation of future tightening of the safety regulations. As level 4 facilities have to be inspected by the appropriate Federal Agency and commissioned before use, clandestine operations are probably precluded.

e. **Concern:** How do interested persons differentiate confidently between offensive and defensive research.

Comment: We agree that the line between offensive and defensive biological and chemical research is a fine one. Experimentation with lethal substances for the testing of defensive devices understandably arouses suspicions that results are being or could be diverted to offensive purposes. Our own method of inspection and monitoring has assured us that at DRES the budget is insufficient, the facilities inadequate and the production and field trial personnel lacking to permit production and packaging of any toxic materials for purposes of warfare.

However, investigation of terrorist groups shows that many lethal substances can be produced in fearsome amounts in bathtubs or baby-food factories so, essentially, a final verdict depends on openness and trust. DRES has been particularly open in its dealings with the press and public in the past few years and has allowed our Committee to scrutinize classified projects and international agreements. We have established a state of mutual trust with the DRES scientists and other personnel and are convinced that they believe that the research being conducted there is wholly directed towards defence.

f. **Concern:** When the Biological and Toxin Weapons Convention is revised to include provisions for verification, and the Chemical Weapons Convention comes into force, specialists in verification techniques will be required to enforce these treaties. Canada should be training scientists to assume such roles.

Comment: In conversation with senior DRES officials, we found that they considered verification training and technology, and biological and chemical weapons destruction techniques among their top priorities. We also found that they had assumed leading roles (together with countries such as The Netherlands) in trial inspection exercises. Immediately subsequent to our visit, senior scientists from DRES have been asked to brief a UN Commission on Weapons Disposal, and other DRES scientists have joined UN bodies investigating suspected biological and chemical facilities in Iraq.

Project SWIFTSURE. The planning, public relations program, degree of community involvement, the Departmental and contract personnel concerned, schedule adherence, the plant itself and the implementation of the project have been exemplary. The approach used to conduct this activity should be considered as a model for the handling of any future controversial issues.

IMPRESSIONS OF PERSONNEL AND PROGRAMS

We were again struck with the professionalism, maturity and enthusiasm demonstrated by those DND members who participated in the briefings and demonstrations presented to the BCDRC throughout the 1991 visitation schedule. Also, the rate of dissemination of and positive reaction to information derived from lessons learned during the Gulf War was impressive.

Within DND's biological and chemical defence research and development program the quality of science, the projects underway, the resultant publications and the level of safety awareness continue to be of a high standard. The multiplicity of commercial uses of the results of the work at DRES, particularly in the fields of public health, medical science, geriatrics and agriculture, should be made more widely known to the public.

SOME CONCERNS

- Although statements describing all existing contracts with outside agencies were open to our review, briefing of the BCDRC by a cross-section of selected contractors annually is deemed to be necessary in future in order to provide us with complete confidence in the total program.

- The measures taken over the past year to enhance public awareness and trust in Canada's biological and chemical defence program have been very successful. However, doubts and suspicions still arise from time to time. These only can be allayed if the openness and consultation that characterized Project SWIFTSURE are applied to all potentially controversial programs.

- Communication between scientists and support staff at DRES and the internal information flow seem to have improved markedly in the past year. The informal and informative newsletter "Pronghorn" is a major contributor in this regard. However, continuing effort will be required to maintain the easy rapport, sense of purpose and identification among all employees that characterizes good research laboratories.

- We realize that visiting scientists from DRES lecture at the CFNBC School and that the School instructors train at Suffield. Regardless, we think it important that more members of the School staff should have backgrounds in science or engineering.

- The advent of the Gulf War and the unpredicted political changes underway in Eastern Europe have contributed significantly to the major changes taking place in Canada's military emphasis. These, in turn, might precipitate calls for relinquishing all biological and chemical defence research. However, it seems likely that our country will play an

increasing role in peace restoration and peacekeeping operations in lesser developed areas of the world. Such activities will continue to require detection, protection and verification devices that can only be maintained at state-of-the-art by a continuing modest program of research and development.

- The potential problem of terrorists using, or threatening to use, chemical or biological weapons in Canada occasions some anxiety. The Committee remains to be persuaded that all involved agencies' responsibilities have been clearly mandated and that inter-departmental coordination is of the requisite standard.

CONCLUSIONS

- The BCDRC found neither indications of duplicity within DND's biological and chemical program nor evidence to support the contention that offense-related activities were being conducted either on behalf of Canadian authorities or to comply with any multilateral treaty commitment.
- We are convinced that Canada must retain the capability to effect defensive research and development to permit military operations under the threat of biological and chemical weapons. We believe that the priority of effort should be accorded to the following projects:
  a. the refinement of procedures to foresee and assess hazards posed by both established and hypothetical chemical and biological agents;
  b. the up-grading of agent detection systems;
  c. the improvement of methods of decontamination of equipment;
  d. the development of less physiologically burdening protective clothing; and
  e. prophylaxis and therapy for biological agents.
- We consider that our Committee, in order to be, and to be perceived to be, wholly competent in the review of all aspects of biological and chemical research and development, should comprise, as a minimum, a chemist, a bacteriologist or microbiologist (whose specialty is infectious diseases) and a toxicologist.
- The BCDRC should review and report annually on:
  a. the implementation of the recommendations contained in the Independent Environmental Audits of DREO and DRES;
  b. the activities and records of the DCIEM, DREO and DRES Human Ethics and Animal Care Committees; and
  c. previous BCDRC Report recommendations.
- In order to comply completely with the intentions of the Biological and Toxin Weapons Convention, Canada should seriously consider enacting supporting legislation to meet or exceed that enacted by some of the other signatories.

RECOMMENDATIONS

I. Canada continue to develop and refine verification, compliance monitoring and investigatory techniques.

II. Consideration be given to the co-location of DRES and the CFNBC School.

III. The BCDRC Annual Report be submitted to the Ad Hoc Committee on Chemical Weapons of the Conference on Disarmament in Geneva.

IV. The BCDRC be offered annually a vacancy on the Nuclear, Biological and Chemical Senior Officers' Course conducted by the CFNBC School.

V. The Canadian Forces Medical Services should hold reasonable amounts of appropriate medical supplies to treat possible future biological and chemical casualties on little or no notice.

VI. Canada continue to function internationally in the biological and chemical fields in accordance with current government policy.

VII. Every reasonable measure possible should be taken to enhance the visibility of all biological and chemical defence research and development conducted in Canada.

VIII. A bacteriologist or microbiologist (whose speciality is infectious diseases) be appointed to the BCDRC at the earliest opportunity.

ANNEX A

TERMS OF REFERENCE BIOLOGICAL AND CHEMICAL DEFENCE REVIEW COMMITTEE

BACKGROUND

1. The policy of the government of Canada is to press for a global, comprehensive and verifiable treaty to ban all chemical and biological weapons. While the threat from such weapons remains, however, Canada has an obligation to ensure that members of the Canadian Forces (CF) have adequate training and equipment to protect themselves against exposure to chemical and biological agents.

2. On the other hand, the Canadian public has a right to be assured that Canada's policy of maintaining only a defensive capability in this field is fully respected at all times, and that any research, development and training activities undertaken by this country are professionally conducted and pose no threat to public safety or the environment.

TASK

3. The Biological and Chemical Defence Review Committee (BCDRC) is to review annually the research, development and training programs in biological and chemical defence undertaken by the Department of National Defence (DND).

EXECUTION

4. BCDRC will annually:

   a. visit the major activity centres:

      1) The Defence Research Establishment Ottawa (DREO);

      2) The Defence Research Establishment Suffield (DRES); and

      3) The Canadian Forces Nuclear, Biological and Chemical School (CFNBCS);

   b. visit at least two other DND Establishments where biological and chemical training is conducted;

   c. review the annual DND R&D Program as developed by the Chief of Research and Development (CRAD) and approved by the Defence Management Committee (DMC);

   d. review the implementation of the recommendations made in the BARTON REPORT of 31 December 1988; and

   e. submit a report of their findings to the Chairman, Defence Science Advisory Board (DSAB).

5. The Chairman, DSAB will present the Report to the Chief of the Defence Staff and the Deputy Minister of National Defence.

6. DND is to respond to the Report to the BCDRC Chairperson with a copy to the Chairman, DSAB within 90 days of the presentation of the Report to DND.

COORDINATION

7. Assignment of responsibilities:

   a. OPI: Chairman, DSAB;

   b. Committee (to consist of a chairperson and two senior representatives of the Canadian scientific, juridical and industrial communities): to be appointed for a term of two/three years by DND on the recommendation of the Chairman, DSAB; and

   c. Conduct of tasking: all elements of DND and the CF are to assist the Committee as required by the Chairperson.

8. Support:

   a. DSAB will assign an executive officer to the Committee;

   b. the committee executive officer will attend to all liaison, travel, accommodation, coordination, administrative support matters and will prepare and publish, as directed by the Chairperson, the Committee's annual report;

   c. technical support is to be available from whatever sources the Chairperson requires; and

   d. access to all relevant information and personnel is to be given to the Committee.